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ISF294 Issue 02

MSP Lubrication Design & Installation

INTERLUBE Leaders in Lubrication Solutions

HDI Pump & Accessories

OPERATION and SERVICE MANUAL

OPERATION & SERVICE MANUAL

SAFETY

As with all equipment, all due care must be used when servicing the HDI lubrication system.

Throughout this manual there will be information provided which requires special attention. This information will be displayed under the headings of **WARNING, CAUTION,** or **NOTE**.

WARNING

Information given about a situation that can cause significant damage to the machine or injury to personnel.

CAUTION

Information given about a situation that can cause damage to the machine.

NOTE

Information special interest

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9. TECHNICAL DATA

9.1. Pump with integral controls

- Available with 3, 6, 9 or 15 litre reservoirs
- Supplied in either 12 or 24v DC. Output speed 30/33 RPM.
  12v DC max running current 6A
  24v DC max running current 3A
  Start up current 10A
- PCB dual voltage & EMC compliant
- Built in memory, recommencing either run or delay cycle on power up.
- Transient protection to ISO 7637/- Road Vehicles.
- Dual LED digital display used for programming & run information
- IP65 protected
- Uses lubricants from SAE 80 oil upto & including NGLI 2 Grease.
- Operating temperature +40ºC to - 30ºC (using low temperature grease)
- 2 fill options - quick fill or grease nipple
- Can be used with progressive blocks or divider valves
- Maximum of 3 pumping units per pump.

9.2 Pumping Units

a) Spring loaded piston type
b) Pumping unit output 4.6cc/Min
c) Max working pressure 250bar
d) Relief Valve set at 350bar
e) Outlet connection for 6mm OD Standpipe
f) Thread size M22x1.5

Two types available for USA market
a) Push pull piston type
b) Standard pumping unit output 4.6ccs/min
c) Adjustable pumping unit output 2cc to 4.6cc/min
d) Max working pressure 250 bar
e) Integral pressure relief valve set at 300 bar
f) Outlet connection for 6mm OD standpipe
g) Thread size M22 x 1.5

9.3 Progressive blocks

- The modular blcoks are available in 6 outputs 0.10, 0.15, 0.20, 0.25, 0.30 and 0.40ccs/cycle
- Assemblies available with 6 to 20 outlets
- Indicator pin's available in all but the 0.10cc block
- Cyclic indicator switches available as an option
- Compact in size each wafer only 55mm x 45mm x 18mm
- Outlets tapped 1/8 BSP
- Inlet tapped 1/4 BSP

9.4 Divider Valves

- Monobloc design with number of outlets from 6 to 18
- Each outlet delivers 0.20ccs/cycle
- Crossporting and single outlets possible
- Available with cycle indicator pins
- Max operating pressure 300bar
- Operating temperature -30ºC to 100ºC
- Outlets Tapped 1/8 BSP
- Inlet Tapped 1/8 BSP

8. SPARES & ACCESSORIES

8.1. Pump Spares

Part No	Description
HDI/SP1	12v motor
HDI/SP2	24v motor
HDI/SP3	Quick fill adaptor
HDI/SP4	Push button + 10m cable
HDI/SP5/6	Low level sensor - 6 Kg pump
HDI/SP5/9	Low level sensor - 9 Kg pump
HDI/SP5/15	Low level sensor - 15 Kg pump
HDI/SP6	Lid assy 6,9 and 15 Kg pumps
HDI/SP7/3	Reservoir/lid/tie rods 3 Kg pump
HDI/SP7/6	Reservoir/lid/tie rods 6 Kg pump
HDI/SP7/9	Reservoir/lid/tie rods 9 Kg pump
HDI/SP7/15	Reservoir/lid/tie rods 15 Kg pump
HDI/SP8	Proximity alarm plug
HDI/SP9	Low level pump plug
HDI/SP10P	Reservoir gasket 3 Kg moulded res
HDI/SP10	Reservoir gasket for clesr reservoirs
HDI/SP11/3P	Paddle blade assy 3 Kg moulded res
HDI/SP11/3	Paddle blade assy 3 Kg clear res
HDI/SP12	Paddle blade assy 6,9 and 15 Kg res

8.2. Pumping Unit Spares (USA Versions)

Standard Pumping Unit

PU300-350-A

Adjustable Pumping Unit

PU400-350-A

PU300-350-A.....Standard Pumping Unit
PU400-350-B.....Adjustable Pumping Unit

8.3.

Wafer Options		
Output cc/Stroke	*For Single or Double Outlets*	*Blocks with Indicator Pins*
0.10	*CB/10/P*	*Not Available*
0.15	*CB/15/P*	*CB/IP15/P*
0.20	*CB/20/P*	*CB/IP20/P*
0.25	*CB/25/P*	*CB/IP25/P*
0.30	*CB/30/P*	*CB/IP30/P*
0.40	*CB/40/P*	*CB/IP40/P*

Tie Rods in sets of 3

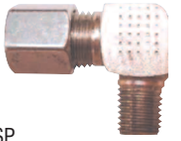
3 Wafer Block .....33126 -640
4 Wafer Block .....33126 -641
5 Wafer Block .....33126 -642
6 Wafer Block .....33126 -643
7 Wafer Block .....33126 -644
8 Wafer Block .....33126 -645
9 Wafer Block .....33126 -646
10 Wafer Block .....33126 -647

8.4. Other Parts for Progressive Blocks

CB/SEB/P.....Start and End Block Set
CB/BB/P.....Block Connections Set
ESW02.....End of Line Switch
25257-595.....1/8 BSP Blanking Plug
21815-329.....M4 Cap Screw

8.5. Micellaneous Accessories

Elbow Connectors



25477-905.....6mm x M6
25477-915.....6mm x M8
25477-925.....6mm x 1/8 BSP
25477-935.....6mm x M10
52938/101.....Swivel Elbow 1/8BSP

Straight Connectors

25477-767 .....6mm x 1/4 BSP
25477-906 .....6mm x M6
25477-916 .....6mm x M8
25477-926 .....6mm x 1/8 BSP
25477-936 .....6mm x M10
LM506.....DE Connector
NG6302.....Short Extension 1/8 BSP
NG6303.....Long Extension 1/8 BSP

Hose & Tube Spares

24210-402/P .....H P Hose (unfilled)
83417-002/25.....H P Hose (filled) 25M Coil
136782.....6mm Nylon Tube (unfilled)
152820/25.....6mm Nylon Tube (filled) 25M
41250-043/P .....Ferrule for H P Hose
41255-642/P .....Hose Insert 6mm stand pipe
1178-124.....6mm Steel Bundy Tube

General Spares

25381-722.....(Double) Weld Hose Clamp
25381-756.....(Single) Weld Hose Clamp
25477-855.....6mm Olive
25814-008.....8mm P Clip
1837-003.....Spiral Protection 10mm ID
1837-004.....Spiral Protection 14mm ID
1837-006.....Spiral Protection 20mm ID
FP12.5 .....Filler Pump 12 1/2 kg Drum
25717-285/12.5.....12 1/2kg. NGLI2 Grease

1. INTRODUCTION

This manual gives instructions for operating, maintaining, and servicing the Interlube HDI Pump & Distribution systems. Because of the importance of providing the correct lubricant amount to the moving parts of the equipment, read this manual to become familiar with your HDI lubricant system.

Review and follow the procedures given before attempting maintenance or service. Illustrations are provided to aid in disassembly and reassembly.

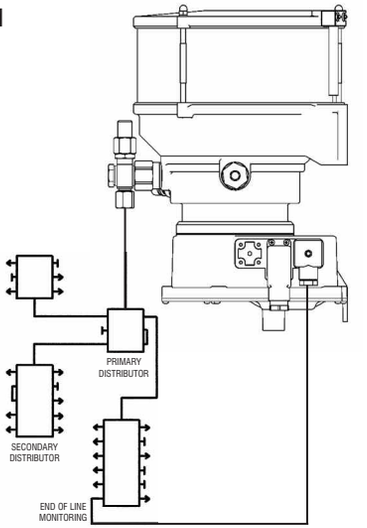
If there are any questions not answered by this manual, contact Interlube Systems or MSP Distributors.

2. GENERAL DESCRIPTION

A typical HDI lubrication system includes the following components (see fig 1):

- Pump with integral reservoir and controls
- Pumping Units
- Progressive Blocks or Divider Valves
- Tubing to the lubrication points
- Fittings at the lubrication points

Fig 1



(Optional)

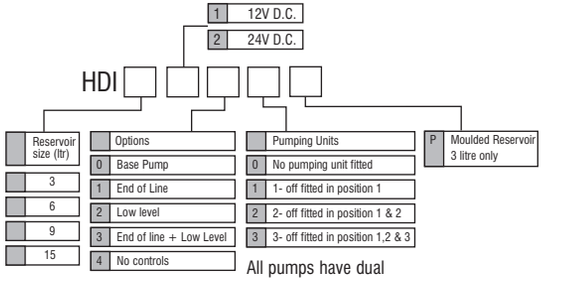
Pumps are available with 3, 6, 9 and 15 litre reservoirs. Fig 2 shows 6 litre version. There is a specific version for the USA.

Fig 2

The HDI pumps are electrically operated (12/24v DC) piston pumps able to accept up to 3 pumping units.

These pumping units (either fixed or adjustable output) feed lubricant to the primary progressive block/divider valve which in turn feeds (where applicable) further secondary blocks/valves. The bearings on the machine/plant are connected to the secondary blocks/valves by hose or tube, bearings can also be fed direct from the pump.

Ordering Method



All pumps have dual fill options, quick fill and grease nipple.

3. COMPONENT OPERATION

3.1. Pump Operation

The HDI range has been designed to provide reliable and virtually maintenance free service in the most demanding of applications.

Each pump has an integral 12v DC or 24v DC motor and is available with or without integral controls. The motor drives the camshaft and impeller which draws grease into the pumping chamber.

Low level indication is optional as well as an option for feedback monitoring from a LSV divider via a proximity switch

3.2. Pumping Units

The Pumping Unit used in the HDI pump fits into the pump body and a rotating cam pushes the spring on the piston to achieve the lubricant output.

There are two versions of the pumping unit available;

a) The spring loaded piston version and
b) The version with the push/pull type piston used in pumps sent to the USA.

See technical data section for operating details.

Fig 3

Spring Loaded
Piston Version

PU300 - 350

Fig 4

Push Pull Piston Type
(Std Pumping Unit)

PU300-350-A

Push Pull Piston Type
(Adjustable Pumping Unit)

PU400-350-A

USA Versions

3.3. Control Options

The control options are integrated into the motor housing with 3 choices for the control of the pump.

a) Total revolutions ON and timed OFF mode.
b) Timed ON and timed OFF mode.
c) Control by end of line switch

Further programming details in Section 4.

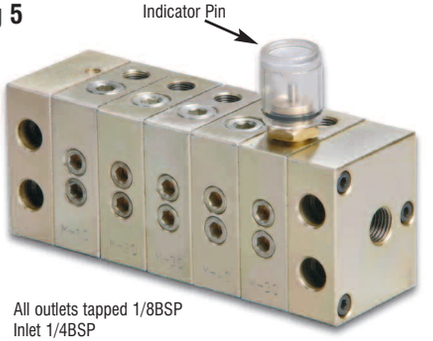
3.4. Progressive Blocks

The Progressive Blocks are a reliable and accurate method of ensuring the correct quantities of lubricant are delivered to pre-determined lubrication points. Progressive Blocks are assemblies containing a series of pistons that deliver lubricant to bearings. The progress of the lubricant through the channels inside the blocks provides the hydraulic force that operates these pistons in a progressive series. each bearing connected to a piston receives a measured supply of lubricant, one after the other.

As the blocks rely on the flow of grease through the internal passageways to operate, any blockage will cause malfunction, and the block will not proceed with its cycle. If this happens lubricant will be delivered through the pressure relief valve on the pumping unit.

Fig 5 shows a typical progressive block assembly.

Fig 5

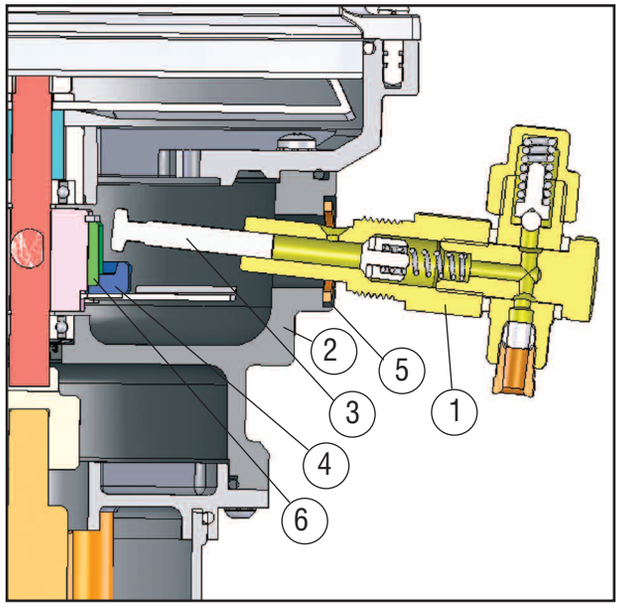


Pumping unit replacement (USA Version)

7.6.2. Using a 24mm AF spanner loosen pumping unit body (1) and unscrew until the thread is clear of the pump body (2). Tilt the pumping unit body (1) to lift the piston (3) clear of the cam ring (4) and then remove. Ensure the piston does not remain in the pump body.

7.6.3. To replace unit pull out the piston (3) from the body (1) of the new pumping unit to the end of it's stroke.
Ensure the copper washer (5) is in position and insert the pumping unit body (1) into the pump body (2). This should be done with the pumping unit body (1) tilted upwards. When the piston (3) touches the cam ring (6) the pumping unit body (1) should be moved to a horizontal position. This should now seat the piston (3) into the cam ring (4). Tighten the pumping unit body (1) using the 24mm AF spanner.

Fig 14



7. SERVICE PROCEDURES

The rugged design and simple construction of the HDI lubrication system assures the operator of a long and trouble free service. If service is necessary use the following procedures to ensure correct replacement of parts.

7.1. Lid Replacement - All models

7.1.1. Remove 3 nuts (5) holding lid to tie rods (6)
7.1.2. Remove lid (7) and 'O' ring (8)
7.1.3. Replace with new lid (7) and 'O' ring (8) position on reservoir (3) and tie rods (6) tighten nuts (5)

7.2. Reservoir replacement - (Clear models)

7.2.1. Remove lid as in 7.1
7.2.2. Withdraw reservoir (3) and lower 'O' ring (9)
7.2.3. Clean around area where new reservoir will be fitted. Position 'O' Ring (9) and replace reservoir between tie rods
7.2.4. Replace lid as in 7.1.3.

(3 Litre moulded version)

7.2.5. Remove the 3 screws holding the reservoir in position on the pump body
7.2.6. Remove reservoir and 'O' Ring
7.2.7. Position new 'O' ring on new reservoir
7.2.8. Re-assemble reservoir to pump body ensuring the breather tube is closest to the mounting bracket
7.2.9. Insert & tighten screws to torque 3Nm, be careful not to overtighten screws.

7.3. Paddle Assy Replacement - All models

7.3.1. Remove lid and reservoir as in 7.1 and 7.2
7.3.2. Remove nut (10) and washer (11) then remove paddle (16)
7.3.3. Replace new paddle (12) then washer (11) and nut (10). Tighten to 6.5Nm
7.3.4. Replace Reservoir and lid as in 7.1.3 and 7.2.3

7.4. Replacement Motor Assy - All models

7.4.1. Remove 8 screws (13) securing the bottom cover (4) and 'O' ring (15)
7.4.2. Disconnect motor connections from PCB (18) after removing PCB (18) from housing (19)
7.4.3. Remove 6 screws (17) and separate motor housing (19) from pump body (1)
7.4.4. Remove 3 screws and washers (20)(21) securing motor (16) to motor housing (19)
7.4.5. Withdraw motor (16) and replace with new. Replace 3 screws and washers (20)(21). Tighten to 6.0Nm
7.4.6. Fix motor housing (19) to pump body (1) ensuring gasket (22) is in place using 6 off screws and washers (17). Tighten to 2.7Nm
7.4.7. Replace motor connections to PCB (18) and slide PCB back into the groves in motor housing (19)
7.4.8. Replace cover (14) and 'O' ring (15) securing with 8 screws (13). Tighten to 0.6Nm

7.5. Replace PCB - All models.

7.5.1. Remove 8 screws (13) securing the bottom cover (4) and 'O' ring (15)
7.5.2. Slide out PCB (18) from housing (19) and remove all the electric connectors
7.5.3. Replace all connectors on new PCB (18) and slide back into housing (19)
7.5.4. Replace cover (14) and 'O' ring (15) securing with 8 screws (13). Tighten to 0.6Nm

7.6 Pumping unit replacement (spring return version)

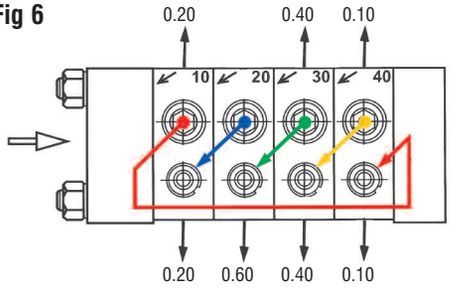
7.6.1. Using a 27mm AF spanner loosen pumping unit body. Remove spring loaded pumping unit. Ensure there is no loose dirt around the pumping unit aperture then screw in the new pumping unit tightening with a 27mm AF spanner.

3.4.1. Using Progressive Blocks

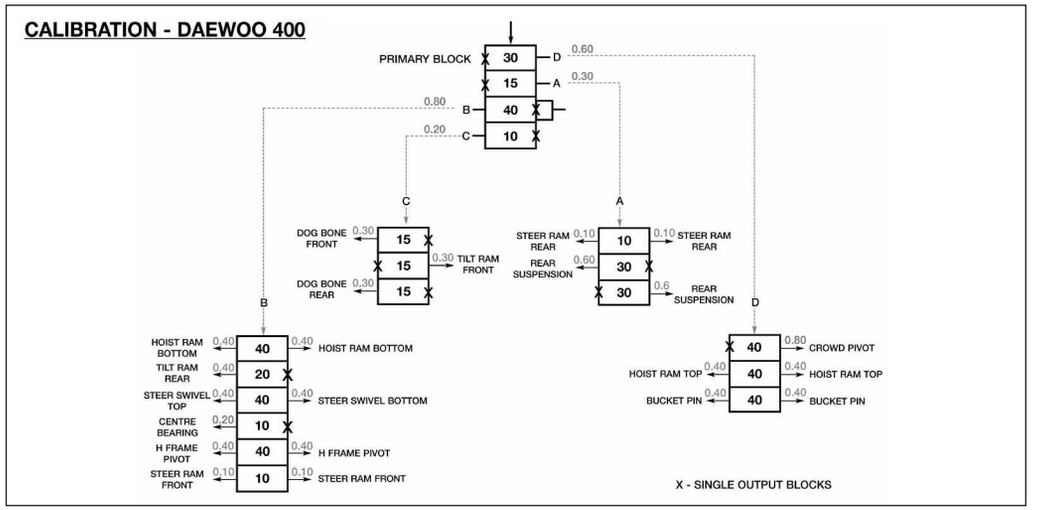
Progressive Block assemblies consist of a start and end block plus a minimum of 3 middle wafers up to a maximum of 10, held together with 3 tie rods. The output from each wafer is discharged through the preceding wafer as shown in fig. 6.

For this reason it is necessary to design a calibration and block build sheets as in figs 6(a) and 6(b). As an example we have used details on a Daewoo 400 loading shovel.

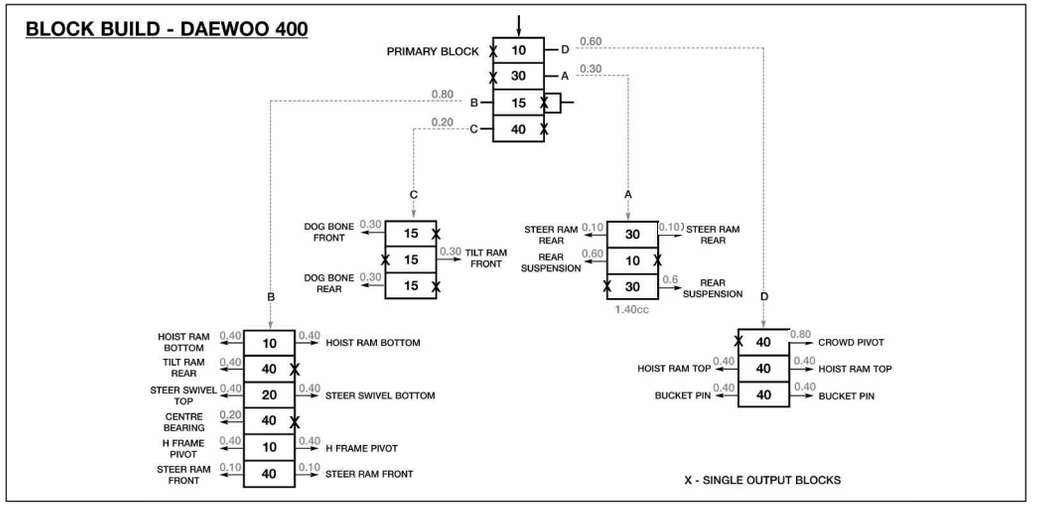
Fig 6



Calibration sheet - Fig 6(a)



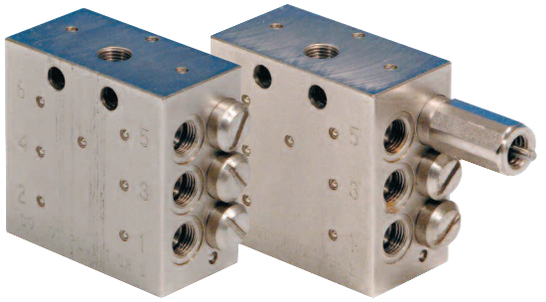
Calibration sheet - Fig 6(a)



3.5 Divider valves

Divider valves offer an alternative to progressive blocks for the distribution of lubricants to bearings. They are a monoblock design with 6 to 14 outlets.

Divider Valves



Divider Valve Options

Part No	Description
LSV-06	SSV6 6 outlets
LSV-08	SSV8 8 outlets
LSV-10	SSV10 10 outlets
LSV-12	SSV12 12 outlets
LSV-14	SSV14 14 outlets
LSV-06K	SSV6K 6 outlets + pin
LSV-08K	SSV8K 8 outlets + pin
LSV-10K	SSV10K 10 outlets + pin
LSV-12K	SSV12K 12 outlets + pin
LSV-367-13-1	Proximity adaptor
LSV-512-4482	Proximity switch

Fig 7 shows the operation of the divider valves.

More than a drilled manifold block, the valve incorporates a series of metering pistons which accurately dispense lubricant from each outlet, overcoming back pressure of upto 1,000 psi. Visual monitoring is provided with an indicator pin, which confirms a valve has completed a full cycle. Divider valves are available for grease or oil applications.

Fig 7

Fig 7A

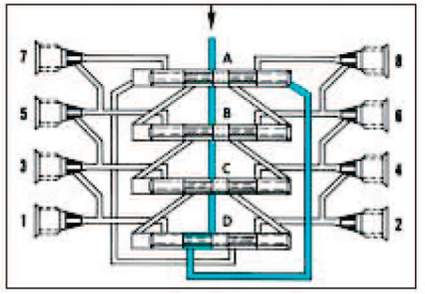


Fig 7B

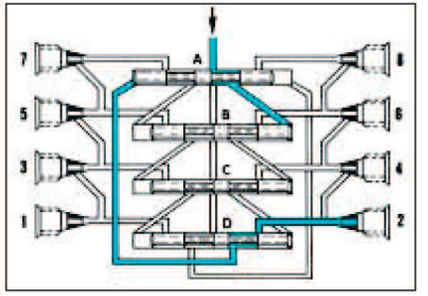


Fig 7C

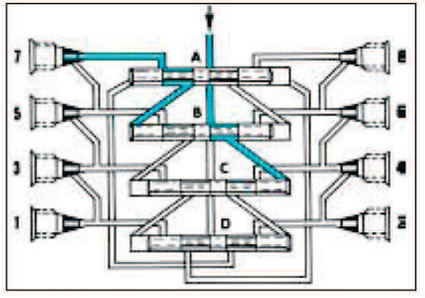
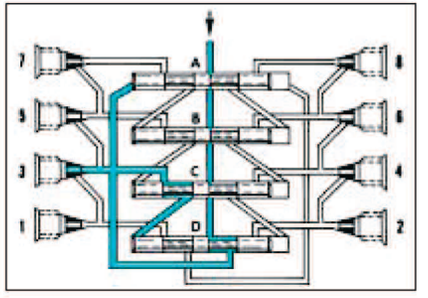


Fig 7D



PROBLEM	POSSIBLE CAUSE	REMEDY
G. Grease flowing from Pumping Unit Relief Valve.	1. One or more lubrication points are blocked, and will not accept grease. 2. Fault in Distributor Block assembly.	1. Remove pipe from fitting and flush bearing through with grease gun. 2. Replace the faulty Distribution Block.
H. Inoperative End of Line Switch.	1. Connection to indicator Pin loose. 2. Internal wiring fault in switch.	1. Tighten socket set screw. 2. Replace with new End of Line Switch.

6. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	REMEDY
A. All lubrication points appear dry.	1. Empty reservoir 2. Inoperative pump 3. Time between lube cycle is too long. 4. Reservoir has been filled with an unsuitable lubricant. 5. Inoperative Pumping Unit 6. Pumping unit not “sitting” in cam ring 7. Main Pressure Line damaged/broken. 8. Reservoir vent blocked from overfilling.	1. Refill the reservoir, using the correct lubricant. 2. Refer to **PROBLEM** “E”. 3. Adjust pump **CYCLE TIME** setting. 4. Remove the lubricant and replace with correct grade of lubricant. 5. Inoperative Pumping Unit 6. Remove & refit correctly. 7. Find breakage & replace with new hose. 8. Clear vent and only fill to max level.
B. One or more lubrication point appears dry while others receive sufficient lubrication.	1. Broken or severed secondary grease lines. 2. Incorrect specification of “wafer” in block assembly. 3. Incorrect specification of divider valves.	1. Determine cause, and if necessary, re-route. 2. Identify “wafer” and replace with a higher output one. 3. Re-configure divider valve specification to higher output.
C. All lubrication points are over-lubricated.	1. Incorrect setting of “on-time” or “Delay Time”.	1. Reduce “On Time” or increase “Delay Time”, or both.
D. One or more lubrication points are over-lubricated.	1. Incorrect specification of “wafer(s)” in block assembly(s). 2. Incorrect specification of divider valves.	1. Trace “wafer(s)” and replace with lower output ones. 2. Re-configure divider valve specification to lower output.
E. Inoperative pump.	1. No input power. 2. Fuse is blown. 3. Loose wire connection inside the pump. 4. Defective PCB. 5. Defective Motor.	1. Check for power to the pump. and controller. 2. Check in-line fuse. Replace if necessary. 3. Check all wires and connections in the pump. 4. Replace PCB. 5. Replace Motor.
F. Inoperative Pumping Unit.	1. Pumping Unit not “sitting” in cam ring. (USA Version) 2. Inoperative Pump 3. No Grease flow	1. See Section 7.6 2. Refer to **PROBLEM** “E”. 3. Replace pumping unit

The inlet passageway is connected to all piston chambers at all times with only one piston free to move at any time.

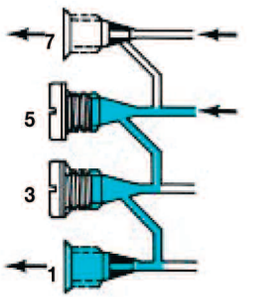
- With all pistons at the far right, lubricant from the inlet flows against the right end of the piston A (fig 7a).
- Lubricant flow shifts piston A from far right to left, dispensing lubricant through connecting passages to outlet 2.
  Flow is then directed against the right side of piston B (fig. 7b)
- Piston B shifts from right to left, dispensing lubricant through outlet 7. Lubricant flow is directed against the right side of piston C (fig. 7c)
- Piston C shifts from right to left, dispensing through outlet 5. Lubricant flow is directed against the right side of piston D.
- Piston D shifts form right to left, dispensing through outlet 3. Piston D’s shift directs lubricant through a connecting passage to the left side of piston A (fig 7D).

Lubricant flow against the left side of piston A begins the second half-cycle, which shifts pistons from left to right, dispensing lubricant through outlets 1, 8, 6 and 4 of the divider valve.

Crossporting a divider valve

Outputs from adjacent outlets may be combined by installing a closure plug in one or more outlets. Lubricant from a plugged outlet is redirected to the next adjacent outlet in descending numerical order. Outlets 1 and 2 must not be plugged since they have no cross-port passage to the next adjacent outlet.

Outlets 5 and 3 are cross-ported and directed through outlet 1. In this example, outlet 1 will dispense three times as much lubricant as outlet 7. The tube ferrules in outlets 1 and 7 block the cross-port passage so that lubricant flow is only directed through outlets.



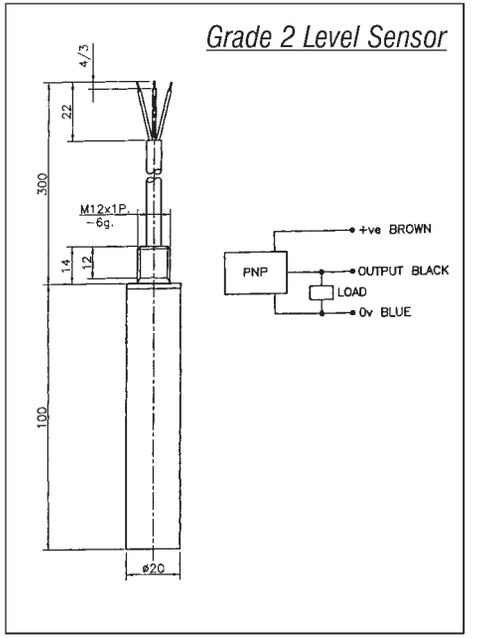
3.6. Low Level Sensors

These highly reliable capacitive sensors are fully sealed and encapsulated to operate in the most arduous conditions with NGLI 2 grease.

Fig 8 shows pictoral view and Fig 9 the version for a 3 litre pump. (Extensions are used for larger capacity reservoirs).

Fig 8

Fig 9



3.7. Filling the Reservoir

The pump can use a range of lubricants from SAE 80 oil up to and including NGLI 2 grease.

The HDI pump is only filled through a filling point on the pump body (1) between the pumping units ports using a std grease nipple or ISO B quick fill adaptor (2). This prevents dirt from entering the reservoir and ensures that air pockets in the pump are eliminated.

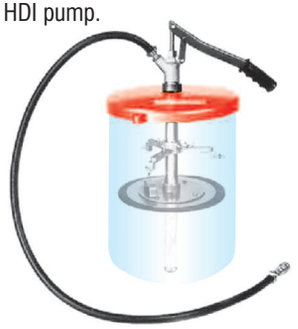
CAUTION

Do not over fill the reservoir (3). Fill only to the max level label (4). Overfilling will block the vent in the reservoir creating a vacuum in the pump and possible reduction of grease to bearing points.

Methods for Filling the Reservoir

1. A gun is available that accepts standard 400gm grease cartridges that screw directly into a blank pumping unit port. Grease is pushed into the pump quickly using the handle of the gun. A 90° filling adaptor can be supplied as an option.

2. A manual filler pump (part no. J2) will fit 12½, 20 and 28kg kegs. It comes with 1.5m of hose and a female quick release coupling to fit directly to the HDI pump.



4. Programming the HDI Controller

Programming is carried out using the select and enter buttons as shown in the picture.

The setting details are shown on the digital display at each stage.

Pump Run Time Options

1. With Time “ON” Mode (t) from 1 min to 99 mins.

2. With Revs “ON” Mode (r) 10 revs to 200 revs. Note: Motor speed 30rpm.

Pump Delay Time

Variable from 1 min to 99 hours 59 mins.

5.4 Wiring Diagram for HDI Pump

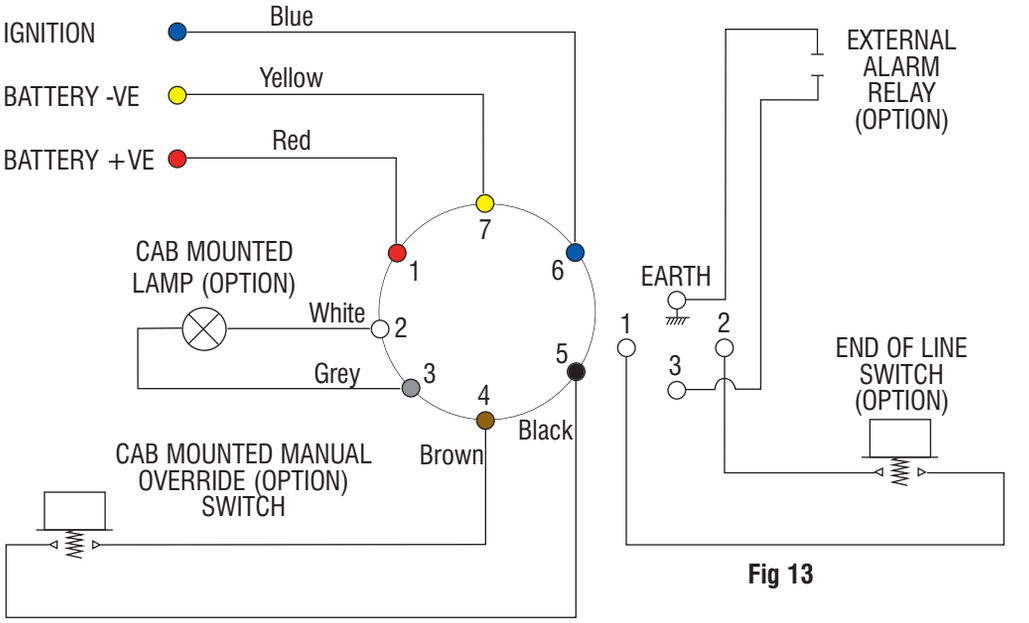
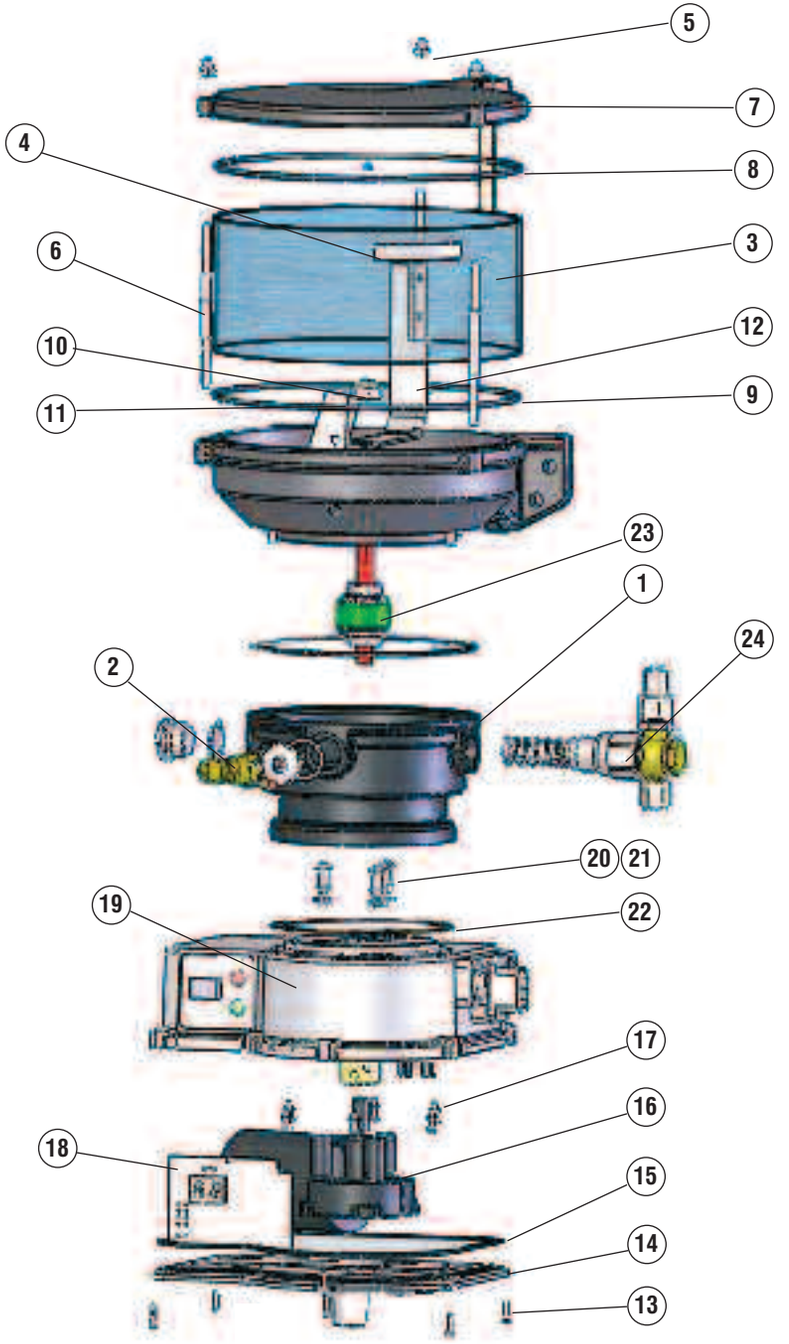


Fig 13

Parts List for a Typical 6 Litre Pump

Item	Description	Part No
1	Pump Body	37250-043
2	Fill Adaptor	25471-107
3	Reservoir	33242-246
4	Max Level Label	31867-318
5	Tie Rod Retainers	21881-323
6	The Rod	33126-616
7	Reservoir Lid	37250-009
8	“O” Ring Top Seal	25145-610
9	“O” Ring Bottom Seal	25145-610
10	Paddle Locknut	21885-810
11	Paddle Washer	21181-746
12	Paddle	83416-363
13	Bottom Cover Screws	21252-076
14	Bottom Cover	38580-147
15	Bottom Cover Seal	25147-430
16	Motor 12v	27675-101
16	Motor 24v	27675-201
17	Motor Housing/Pump Body Screw	21815-420
18	PCB	83344-132
19	Motor Housing	38580-146
20	Motor Fixing Screws	21815-816
21	Motor Fixing Washers	21171-844
22	Gasket	38735-662
23	Cam	33414-607
24	Pumping Element	PU300-350

5.3 Pump-Exploded View



Time "ON"/Time "OFF" mode

Press select and enter buttons together for 5 seconds to enter programme mode.

1) Display will show "Sl " (Run Mode) press enter button, then select button to show "t" Press enter to accept

2) Display will show "S2" (Run time) Press enter button then select button to set run time in minutes from "01" to "99" (for example 05 gives a run time of 5 mins).
Will provide run time from 1 min to 99 mins Press enter to accept

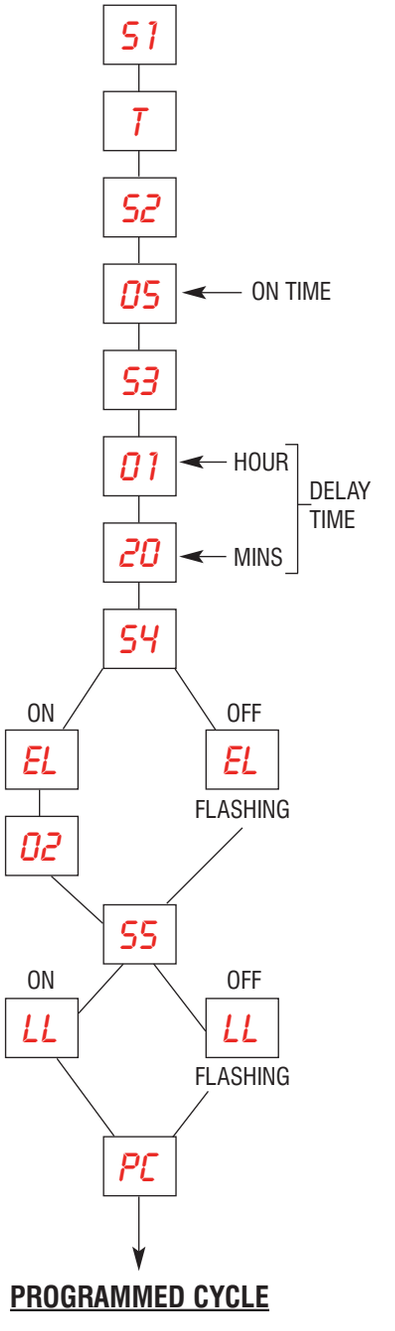
3) Display will show "S3" (Delay time) Press enter button, for example to set a delay time of 1 hour 20 mins, press select button to display "Ol " then enter to accept, then select button to display "20". Press enter to accept.

4) Display will show "S4" (End of line switch setting) Press enter button, display shows "EL" press select to choose between
a) When "EL" is flashing end of line sensing is "OFF" or
b) When "EL" is continuously lit end of line sensing is "ON"
Press enter to accept If end of line switch is "ON" next display will show "Ol Select between "Ol " to "10" for the number of cycles of the lubrication system Press enter to accept.

5) Display will show "S5" (low level option) Press enter button, display shows "LL" press select to choose between a) When "LL" is flashing low level sensing is "OFF" or b) When "LL" is continuously lit low level sensing is "ON"
Press enter to accept

6) Display shows "PC" (Programming complete)
After 10 seconds return to run mode.

To prime the system set the delay time to "00" hours and "00" minutes. Please note this time setting is not intended as an operating mode.



PROGRAMMED CYCLE

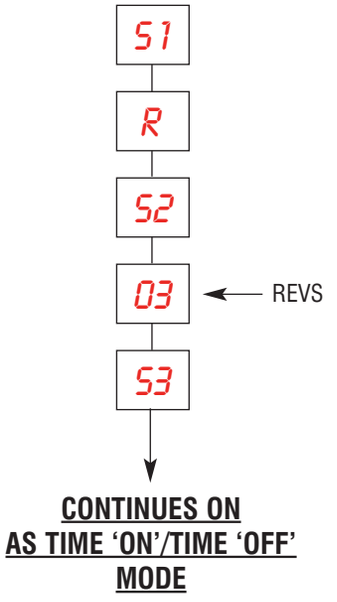
Programming the HDI Controller

Revs "ON"/Time "OFF" mode

As previous section but sections 1 & 2 replaced by the following: -

1) Display will show "SI " (Run mode) Press enter button, then select button to show "r" Press enter to accept

2) Display will show "S2" (Run time) Press enter button then select button to set run time in revolutions of the pump from "OI " to "20" Each step increments the number of revolutions by 10, for example "01" is 10 revs and "03" is 30 revs.



Notes: -

To view current programmed settings
a) press the "select" button for 10 seconds this will activate the programme view mode displaying the setting of each step for 3 seconds. After showing "PC" for 3 seconds the pump will return to run mode.

Low level warning
b) If a low level alarm is triggered the pump will continue operating and any alarm warnings will continue until the reservoir is re-filled.

To prime the system
c) set the delay time to "00" hours and "00" minutes. Please note this time setting is not intended as an operating mode.

Note:-

The manual override button on the pump can be operated at any time without the need for the ignition circuit to be on, a positive safety benefit.
Operating the manual override will start one cycle of the pre-set run time.

Changing Programme

Press select and enter buttons together for 5 Secs to enter programming mode

1) Display will show S1
2) Press select button to choose the setting you want to change S2,S3 etc then press enter
3) After making the change press enter to accept
4) Press select button until display shows 'PC' "Programme complete" PC

5. GENERAL INFORMATION

5.1 Inspection Proceedure

After initial installation and after any service replacement of the lube system components perform the following maintenance check to ensure the system is operating correctly.

a) Inspect all lubrication points for signs of fresh grease
b) Check the condition of all the fittings and connections. Tighten or replace loose or damaged fittings
c) Check all lubrication lines for wear, breaks and chaffing that may lead to leakage.
d) Check pump operation by using the manual override button on the PCB (18)

5.2 Pump Dimensions

Reservoir Size	Dimension 'A'
3 Litre (moulded)	340 mm
3 Litre clear	300 mm
6 Litre clear	400 mm
9 Litre clear	490 mm
15 Litre clear	700mm

Mounting Dimensions